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**Title:** Business model innovation in the Finnish power electricity sector

**Year:** 2023

**Version:** Accepted manuscript

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### **Please cite the original version:**

Rabetino, R., Kohtamäki, M., Rahman, N. & Huikkola, T. (2023). Business model innovation in the Finnish power electricity sector. In *2023 International Conference on Future Energy Solutions (FES)*. IEEE. <https://doi.org/10.1109/FES57669.2023.10182564>

# Business model innovation in the Finnish power electricity sector

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**Abstract**—The paper focuses on the patterns and nuances of business model innovation in the power electricity sector rather than its outcomes (e.g., specific business models). We conducted a multiple-case study involving three Finnish companies to scrutinize business model innovation within a changing industry disrupted by increasing digitalization and service-oriented opportunities. This study provides 16 shared routines and the related processes and practices for discovering (3 routines), generating (8 routines), and implementing (5 routines) new business models. In so doing, it contributes to the intersection of digital servitization and business model innovation literature.

**Keywords**—business model innovation, digitalization, digital servitization, power electricity sector.

## I. INTRODUCTION

The addition of sensors, digitalization, and connectivity is transforming companies and competition [1], [2] because it allows access to a large amount of data on the condition and performance of products and how customers use them, opening opportunities for new digital applications and services. Technological disruption can originate new value creation and appropriation forms, driving business model innovation (BMI) [3].

BMI has become a critical and challenging activity and calls for reconfiguring organizational practices and processes [4], [5]. Understanding BMI is essential for managers, evident in electricity markets characterized by the advent of smart grids and the need to integrate unpredictable energy sources such as solar and wind [6]. Technology opens the door to new digitally-based business opportunities, energy-as-a-service being an example. Thus, there is a need for innovative business models (BMs), and BMI is critical to success in this industry. Consequently, there is a need to get insights into how traditional and often conservative firms deal with BMI [7].

Against this backdrop, this paper addresses the following research question: *how do traditional electricity firms innovate BMs to respond to technological disruption and changing industry conditions?* We focus on patterns and nuances of practices and processes during BMI rather than on emerging BMs' features. We conducted an exploratory multiple-case study of three Finnish power electricity firms. This study contributes to the literature on BMI in electricity markets. First, the study explores drivers of and barriers to BMI. Second, the paper sheds light on organizational practices to move through the BMI phases. The findings highlight the crucial role of people (individual tactics, mental processes, and behaviors), their impact on BMI, and a BM's role in achieving strategy-environment-structure alignment and fit.

## II. CONCEPTUAL BACKGROUND

### A. BMs and BMI

A BM defines the logic for creating, delivering, and capturing value [8]. It involves a system of interdependent

activities performed by a focal firm and its partners and the connecting mechanisms for joint value creation and capture [9]. Although many accounts exist, a BM is formed by four main blocks: 1) target customer segments (who?), 2) value creating offering attributes or value proposition (what?), 3) value creation and delivery process and competences (how?), and 4) the financial model for value capture (why?) [10].

BMs must change when firms face declining competitiveness [11], [12] or increasing competition from rivals or new entrants [13]. Companies must embrace BMI, resulting in incremental modifications or radical replacement of the current BMs [14], which may be unique for the firm or the industry [15]. BMI is an exploration process that involves experimentation [11], [16]–[18] to change the activity system [9]. BMI typically follows phases [10]. We consider 1) opportunity search, 2) BM generation, and 3) implementation and resource reconfiguration for simplicity.

### B. Digitalization as an Enabler of BMI

Digitalization allows remote diagnosis, monitoring, and operations based on combining smart components like sensors and IoT-based connectivity [19]. Business opportunities emerge by integrating diverse data sources through big data analytics [2]. For instance, digitalization lets firms segment markets better, start new customer relationships, and generate novel BMs, such as anything as-a-service [20]. Thus, digital technologies offer products-service-software solutions by adding customized services to traditional products [21], a trend known as digital servitization. Companies can get real-time information about product usage and performance and offer outcome-based and usage-based models [8], [22].

While it brings BMI on an extraordinary scale [23], digitalization alters companies' activities from product design and development to manufacturing, marketing and sales, and after-sales [2]. The shift influences all the BM elements [15]. Traditional companies face tensions [11] as they may need to reconfigure structures, capabilities, processes, routines, and resources [12], [13]. Often, these tensions cannot be resolved and limit BMI. In particular, firms have difficulties assessing the digital servitization consequences [24]. They face the digitalization paradox and cannot turn a profit from digital investments [25]–[27].

### C. Digitalization and BMI in the Power Electricity Sector

The gradual adoption of novel technologies supported by digitalization and connectivity (e.g., self-generation, electricity storage, micro, smart grids, smart meters, and zero-net-energy buildings) arose as the leading disruptors. Smart grids [28] incorporate sensors, hardware, software, and connectivity, involving distributed electricity resources and generation, demand aggregation and management, energy efficiency and storage, energy communities, microgrids, prosumers, and smart metering and consumption control [29], [30]. Smart grids challenge the traditional model of selling

units of electricity through centralized generation [31] in a new scenario where electricity becomes a commodity that is difficult to differentiate in the context of increasing costs, lowering entry barriers for non-traditional players, and eroding corporation revenues [32]. The industry value chain moved from integrated asset-based to disintegrated service-based [33], opening new connectivity-enabled service-based opportunities downstream. Additionally, the role of some traditional stakeholders changed (e.g., from consumers to prosumers), and new roles emerged (e.g., virtual utilities and aggregators). Firms must reposition within a reconfigured ecosystem and innovate their BMs [34], [35].

Emerging trends pushed traditional power electricity companies towards innovation [36] regarding technology (hardware, software, and data exchange), services and consultancy, and financing [37], and smart grids challenge old BMs [40] have lately raised the need for a shift in BMs [3]. BMI through digital servitization [51] becomes an opportunity [6] since connectivity and sensors provide massive data. BMI entails complex value [38] and digital servitization [39]–[42]. Service options include demand and energy management offerings involving energy saving and efficiency. Advanced services range from standard power products and associated services to life-cycle EV battery change-out and home-related convenience services (e.g., service set-up coordination and management of net-metering-driven grid sell-back).

### III. METHODOLOGY

#### A. Research Strategy

We conducted an exploratory qualitative multiple-case study into how electric firms in Finland develop new BMs and manage BMI.

#### B. Case Selection, Data Collection, and Analysis

Our data includes 12 semi-structured interviews with managers in business development roles from three Finnish energy firms. The interviews were conducted via Zoom (and recorded) by at least two coauthors in 2021. Cases were selected using purposeful sampling [11] considering a few criteria: 1) companies with enough scale to engage in BMI but not foreign corporations that are dependent in their strategic decisions, 2) companies that have brought innovative BMs to market, and 3) geographic dispersion to address different consumers' preferences (one case on the west coast, one in the center of the country, and one in the east of Finland).

We used qualitative content and thematic pattern-matching analysis methods [43]. First, we (verbatim) transcribed and coded the interviews with NVivo. Next, the first author coded all the material to ensure homogeneity of criteria, after which a coauthor confirmed the coding. A team discussion solved cases of discrepancies. Next, we created the data structure [44], available on request. To ensure validity and reliability, we have triangulated with other sources, such as annual reports and press releases, and sent interviewees a draft of the results for comment.

### IV. FINDINGS

This section describes the key findings. Following [45], [46], we present some illustrative power quotes in Table 1. Due to space constraints, additional power and proof quotes are available on request.

#### A. Drivers and Challenges for BMI

Technology push (renewables and digitalization), regulation, and market dynamics have shifted competition in a once conservative industry. The typically emerging service-based and customer-centric offerings mean significant changes in the value proposition associated with new BMs with novel customer channels and relationships and new partners for value creation. Options include energy-as-a-service, demand response, energy consumption optimization, and smart EV charging. Notably, alternative revenue models for value capture are needed (e.g., bonuses, spot pricing, and 'set-and-forget' fixed fee subscriptions).

Conflicting elements appear jointly, affecting the BMI direction and pace. While the technology and regulatory push are evident, regulation remains ambiguous concerning market design, making the estimation of potential profitability difficult and hindering the creation of new BMs. Companies must explore new BMs and invest to avoid being left behind while facing unclear regulations and consumers (notably households) lacking purchasing incentives since the benefits are unclear or the costs offset the perceived advantages.

Three barriers to BMI emerged: 1) organizational inertia/and cultural resistance to change, 2) outdated or missing systems/processes and bottlenecks in information flow, and 3) the difficulties in the innovation process. Interviewees stressed difficulties finding viable BMs, resulting in unclear business cases, particularly for the household segment.

#### B. Discovering, Generating, and Implementing New BMs

Encountering new business ideas entails market intelligence actions such as opportunity screening, market monitoring, and technology scanning. These activities involve interaction and follow-up of customer needs and benchmarking competitors and trends from other industries. Idea identification occurs at all organizational levels, which calls for institutionalizing concrete but open and unstructured idea-creation processes across the organization (e.g., customer interaction, discussion forums, idea assessment, and tracking). Employees have an essential role, while experiential learning (e.g., taking part in business forums that expose employees to ideas from other business areas) can be critical for opportunity generation and must be supported with annual budgets.

BM generation starts with early involvement, assessment of emerging adjacent technologies, and adopting a customer-centric approach. It requires reviewing the strategy to fit industry trends. Thus, BMs develop from strategy choices. In so doing, case companies implemented a formal strategy and roadmapping process, fostered an innovation mindset (supporting experimentation), and encouraged a commitment to vision and agenda through communication and participative processes. The results also highlight the need for structuring decision-making and defining idea assessment rules, which are at the core of the BMI process. These tasks mean developing ideas for new businesses that fit the strategy where prioritization rules must be in place.

According to the interviewees, these activities may often jeopardize old businesses (e.g., selling solar panels and infra for self-generation and consumption vs. electricity selling), bending institutional norms, and carrying on tasks without authorization (e.g., taking risks). Moreover, innovation will not be free of often 'positive' organizational tensions, which calls for encouraging, engaging in, and managing conflict.

TABLE I. Routines, processes, and practices in each phase of BMI

BMI phase	Routines	Practices	Illustrative power quotes
Discovering new BMs	Scanning for technological and market opportunities	Observing customers' needs and benchmarking competitors and companies in various adjacent industries.	"Competitors always determine the field where we play or, at least, the minimum number of services we need to provide. I am looking for ideas from other areas and business sectors and what the energy sector could learn from there." (M7, Case 2)
	Generating and evaluating ideas across the organization systematically	Creating formal and informal discussion forums and channels for interacting and brainstorming with organizational members and customers.	"...today, it is only brainstorming in the classroom or our office because we do not yet have the written process. We are coming, or we are making the process, uh, in the future, but it is not today here yet." (M11, Case 1)
	Supporting staff training and opportunities for experiential learning	Networking, creating staff training programs, and budgeting for testing risky ideas.	
Generating new business models	Strategizing rounds in response to industry trends	Conducting strategy work regularly, which results in roadmaps based on systematic thinking.	"...it started from the strategy process, and then it has been evolving, and whenever we produce a new idea, we compare it to our strategy. What does our strategy say? Does it fit into the strategy? If yes, should we do it? If this is good, then we start. If not, then we start with a feasibility study. What is the market? Does it make any sense?" (M10, Case 3)
	Rising commitment to the strategic vision	Participating employees in the strategy work and explaining and sharing the strategy clearly and openly.	
	Strengthening an innovation culture	Supporting trial and error and risk-taking, rewarding entrepreneurial behavior, allowing for bending corporate norms, jeopardizing old business, and learning from failure.	"...you must be fast, fail fast, and fail forward. So, you can quickly and easily see that this was an innovative idea, but there are no need or business possibilities for that idea. So, let us take another idea."(M4, Case 1)
	Creating idea assessment guidelines and decision-making structures	Addressing ideas as projects, establishing criteria for implementation and priority, and empowering accountable individuals.	"... it is a kind of cultural conflict - and you know sometimes it creates, it really does create frustration, but on the other hand, it also it also kind of strengthens it blues us together." (M6, Case 2)
	Promoting and handling open conflicts	Encouraging tense but honest conversation in a secure setting by integrating individuals with varying risk aversion levels and employing problem-solving methods for dealing with disagreements.	"We use the BMC too. Our development guy introduced the canvas, you know, and uh, he got the idea, you know, from, uh, some Nordic business forum or education. You know he does much of that, and it is his job attending to education and occasions where you get new ideas..."(M6, Case 2)
	Engaging with developing markets and technologies early	Gaining knowledge of emerging markets and technologies, particularly those with unwritten rules, calls for interpreting threats as opportunities and being proactive rather than reactive.	
	Developing innovative business models	Adopting a customer-centered approach for business model generation is supported by analogic and design thinking and involves internal and external stakeholders.	
Implementing new and shifting old BMS	Piloting, prototyping, and scaling business opportunities	Collaborating with tech firms in joint R&D initiatives, even with competitors, to share high costs while testing and piloting potential BMs with customers.	
	Connecting organizational functions and redesigning the organization	Creating adaptable linking structures to guarantee interactions among various functional areas (including changing organizational boundaries) and recruiting key personnel for new roles and responsibilities.	"...we did it already that we in a way separated, we used to have only one company, but now we have different companies."(M1, Case 1)
	Adjusting and streamlining resources and operations	Reconfiguring resources and skills by adding complementary competences, training staff, and technological and digital innovation and system adaptation.	"It was mostly about developing people's competencies, not new job descriptions or jobs." (M8, Case 2)
	Aligning company culture and behavior with strategy	Changing organizational behavior and culture to fit the strategy while improving information flow, encouraging transparency, and promoting teamwork and employee satisfaction.	"So the strategy is a thing that should be very well communicated. Of course, sometimes it could be that it fails, it would fail, or it could be a success story, or you never know."(M9, Case 3)
	Promoting strategic coherence, continuity, and flexibility	Adopting agile and ambidextrous working practices and implementation roadmaps and scorecards for learning and continuous improvement.	"... combined with a complete management by in, we have a fully complete management support for the development steps we are doing, and then that is a good starting point..."(M12, Case 3)
	Demonstrating top management's leadership and stressing commitment to change	Promoting the vision and deciding on strategic priorities may include accepting and dealing with contradictions.	

Companies must enable a safe environment for mature and open discussions, team up with people with different risk aversions, and use alternative problem-solving techniques (e.g., learning cafes).

Many patterns exist among our company cases concerning practices for BM generation, including using external consultants and design thinking tools (e.g., BMC Canvas, Miro, and PowerPoint). Analogical reasoning is critical, where most inspiration comes from the banking, telecommunications, and security industries.

Ecosystem-related activities are essential, which include joint R&D projects and partnering with tech companies and competitors (cooperation) as a coping mechanism to balance

risk and reward. It embraces testing ideas with customers to define the BM in the three cases. Moreover, it involves exploring scalability opportunities via piloting and prototyping, which, together with experimentation, have gained importance as methods in BMI searches.

Reconfiguring organizational resources involves diverse activities and practices. First, companies must ensure the interaction among corporate functions through flexible linking structures and empowering responsible people for new roles and tasks.

Second, resource reconfiguration involves adding resources and competencies, training employees, and adapting systems, technologies, and supporting functions. It also means

getting boundary-spanning resources through integrating complementary competencies and partnership management.

Third, companies must align organizational culture to move forward with these innovation processes due to inertia and change resistance. In so doing, internal communication, openness, and information flowing seem essential to align the culture, creating team spirit, generating employee enthusiasm and satisfaction, and coping with resistance.

Forth, reconfiguring calls for balancing exploitation, exploration and flexibility, and stability to achieve strategic consistency while experimenting with BM configurations.

Finally, the commitment and leadership of the top management are also crucial, according to the interviewees. It involves enacting the vision, setting priorities, and accepting contradictions. It also implies evangelizing tactics to spread beliefs and convert non-believers and collaborating tactics, even involving collegial authority to remove obstacles.

## V. DISCUSSION AND CONCLUSIONS

This study examines BMI in the electricity sector, which undergoes three interlinked transitions: (1) from fossil fuels to renewable energy; (2) from centralized generation and transmission to a decentralized smart grid based on increasing digitization supported by connectivity (e.g., IoT devices and smart energy metering); and (3) from electricity as a commodity to services-led business logic, emphasizing efficient energy production and consumption. The transition necessitates new business logic unfamiliar to traditional utilities in a conservative industry. Identifying the processes, practices, routines, and significant internal and external barriers is critical for firms to renew their strategy and structure (Figure 1).

Thus, the case companies embraced BMI in a context previously described as digital servitization in a dynamic ecosystem where corporate boundaries are blurring, enabling new digital service-based BMs—offerings based on electricity, but only partially. Marketing new connectivity-enabled options for products-services-software systems that rely on remotely managing, monitoring, and enhancing the operation of networked smart devices is crucial. Tensions emerge, and firms embracing smart services must align attitudes and skills in a changing institutional framework [47]. Despite being close to the end users and legally independent, retailers have stronger ties to distribution system operators (DSOs) with divergent goals and mindsets and no direct access to end users. The emerging business logic involves new revenue models and BMI [48], being novel for our case companies but not for the industry. They represent the BMI of the adaptive type [7].

### A. Contributions

This study develops at the intersection of BMI and digital servitization streams of research and offers some conceptual and managerial implications. First, the cases illustrate how new BMs [49] enable fit [50] between strategy, environment, and organization (structure, culture, and resources). During BMI, emerging BM configurations follow the strategy and allow the firm to create a fit with the environment based on reconfiguring organizational structures, culture, resources, capabilities, and routines. Thus, BMI involves a BM configuration change process. The architecture for value creation and capture connects strategic formulation and implementation to ensure dynamic consistency [33], [60]

between strategy, environment, and structure. Thus, in searching for the best possible BM configuration integrating products-services-software, companies find their suitability according to how well they reflect strategic choices given the changing conditions of the environment, and, to do so, and they start from the perspective of increasingly empowered customers.

Next, companies set up value-creation processes related to operations (e.g., project, risk, and stakeholder management), customer relations (e.g., segmentation and needs identification), and innovation (e.g., technology integration, co-developing scalable solutions in their portfolios). This transformation includes redefining the firm boundaries [51] and identifying mechanisms for capturing value based on new revenue models [50]. Likewise, the development of organizational, human, and information/technological capital close the loop of a fitting process [52].

Our evidence suggests that the availability of digital technologies does not warranty, per se, the existence of business cases. Often no immediate financial returns can be expected from investments in digital technologies, referred to as the 'digital paradox' [25], [26]. Digital servitization-oriented BMI in the electricity sector [39], [40] calls for reconsidering value creation-delivery-and-capture-related routines, processes, and practices [28]. New BMs do not materialize without costs. Digitalization can occur at three levels [53]: 1) to improve process efficiency, 2) to digitally enhance the value proposition of the core business (including new digitally-enabled BMs), or 3) to create new BMs in adjacent areas. The case companies implemented digitalization at the first two levels, improving existing processes (cost reduction), finding new ways to sell electricity through new digital channels, and using new pricing models. Connectivity is essential. Regarding the third level, the case companies are piloting to decide the viability and scalability and find business cases related to smart technologies (e.g., gadgets and sensors).

Digitalization has supported a BM shift, but it typically resulted in BM adaptation and, only sometimes, in BMI [7]. Change processes began as a search, often local, to respond to the stimuli of a changing environment, giving rise to a process of BM adaptation. Only sometimes, after testing and adjustment, it led to a genuine BMI. Following [54], energy utilities follow broadening strategies to take the first steps in digitization by investing in market-specific applications and expanding capabilities toward digital energy sales (e.g., selling solar panels and implementing digital platforms and apps for consumption monitoring). The above strategies resulted in BM adaptation (often) and BMI (sometimes). Simultaneously, they search for and experiment with broadening domain-expanding capabilities. Experimentation involves demand response offerings, which require more complex digital technologies and less familiar and more uncertain BMs (e.g., installing sensors for remote monitoring and control). Although the companies succeeded, the sensing capabilities have yet to be developed to move beyond local searches [55].

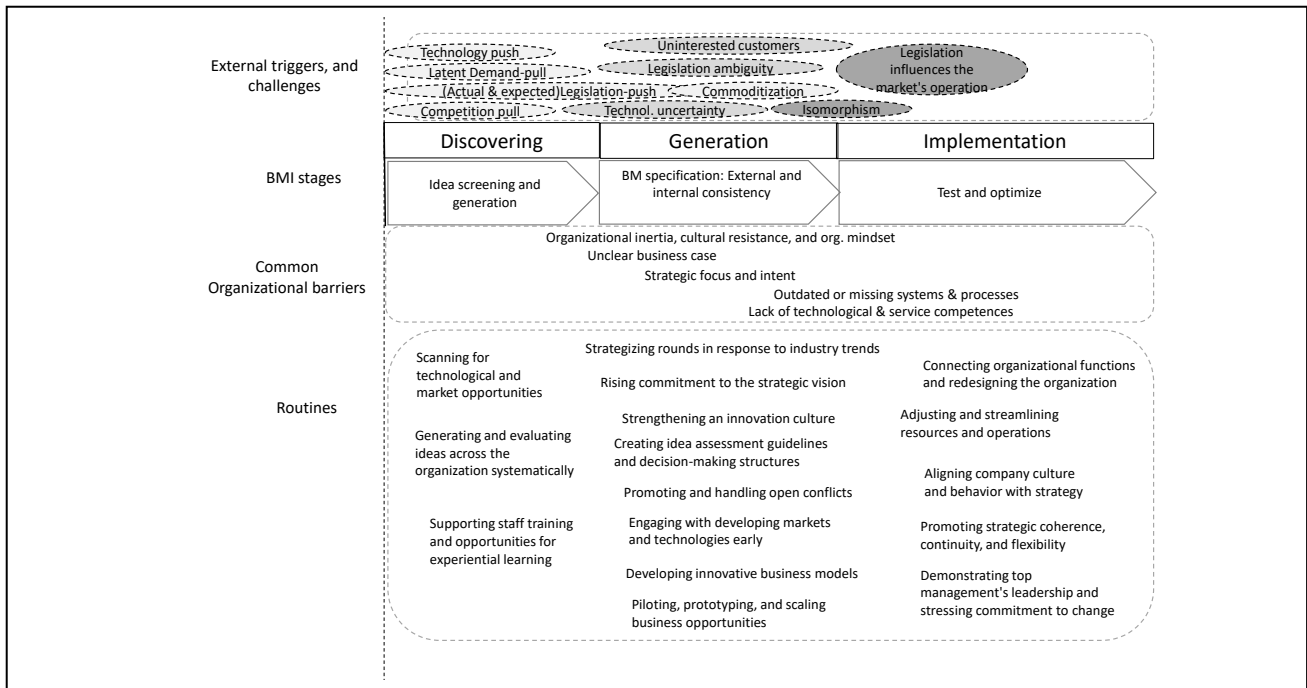


Fig. 1. Triggers, barriers, and routines in each phase of BMI

### B. Managerial Implications

Managers must see digital servitization as a new way of value creation and capture. Therefore, understanding the processes and practices that can lead to a successful BMI is vital for management to develop them. This study offers an understanding that may complement or serve as input for other tools already used during BMI [10], [56]. It suggests possible practices and routines that can be improved and utilized to search for the strategy-environment-organization fit during BMI. These findings may guide and help managers to organize strategy work differently, understanding the key required capabilities and practices and the correct way of positioning the company in the ecosystems in search of dynamic consistency. Moreover, they may understand the role of revenue models and value appropriation mechanisms in BMI. Indeed, by analytical reasoning, managers can develop rules of thumb to achieve digitally-enabled BMI [18].

### C. Limitations and Further Research

This article draws on an exploratory qualitative case study, which does not seek statistical generalization but is used for abstraction and analytical generalization [43]. Most of the results may be valid in some industries facing technological disruption and digitalization, but similar studies in different sectors are required. Concerning BMI, more research is needed concerning revenue and profit models for value appropriation at the ecosystem level. In the digitalization context, data monetization becomes critical. Our findings suggest that BMI is not straightforward and demands particular dynamic capabilities. Therefore, understanding these dynamic capabilities and their microfoundations and the microfoundations of BMI could be a manner to move the research forward, and we suggest this type of analysis as an avenue for future research. Finally, regarding the method, quantitative research should be used to corroborate and extend our findings. Besides, digitization, BMI, and servitization are processes and call for longitudinal studies, primarily (single) in-depth case studies [57], [58].

### ACKNOWLEDGMENT

Business Finland funded this research as part of the FLEXIMAR (Novel Market- place for Energy Flexibility) project.

### REFERENCES

- [1] M. E. Porter and J. E. Heppelmann, "How Smart, Connected Products are transforming competition," *Harv. Bus. Rev.*, vol. 92, no. November, pp. 65–88, 2014.
- [2] M. E. Porter and J. E. Heppelmann, "How smart, connected products are transforming companies," *Harv. Bus. Rev.*, vol. 93, no. 10, pp. 96–114, 2015.
- [3] H. W. Volberda, F. Van den Bosch, and K. Heij, *Reinventing business models: How firms cope with disruption*. Oxford University Press, 2017.
- [4] B. Demil and X. Lecocq, "Business model evolution: In search of dynamic consistency," *Long Range Plann.*, vol. 43, no. 2–3, pp. 227–246, 2010.
- [5] T. Huikkola, M. Kohtamäki, and R. Rabetino, "Resource realignment in servitization," *Res. Manag.*, vol. 59, no. 4, pp. 30–39, 2016.
- [6] N. Rahman, R. Rabetino, A. Rajala, and J. Partanen, "Ushering in a New Dawn: Demand-Side Local Flexibility, Platform Governance and Design in the Finnish Energy Markets," *Energies*, vol. 14, no. 4405, pp. 1–23, 2021.
- [7] T. Saebi, "Evolution, adaptation, or innovation? A contingency framework on business model dynamics," in *Business Model Innovation: The Organizational Dimension*, N. J. Foss and T. Saebi, Eds. Oxford, UK: Oxford University Press, 2015, p. 308.
- [8] D. J. Teece, "Business models and dynamic capabilities," *Long Range Plann.*, vol. 51, no. 1, pp. 40–49, 2018.
- [9] C. Zott and R. Amit, "Business model design: An activity system perspective," *Long Range Plann.*, vol. 43, no. 2–3, pp. 216–226, 2010.
- [10] O. Gassmann, K. Frankenberger, and M. Choudury, *The business model navigator: the strategies behind the most successful companies.*, 2nd ed. Upper Saddle River, NJ: FT Pearson, 2020.
- [11] R. G. McGrath, "Business models: A discovery driven approach," *Long Range Plann.*, vol. 43, no. 2–3, pp. 247–261, 2010.
- [12] E. Danneels, "Trying to become a different type of company: Dynamic capabilities at Smith Corona," *Strateg. Manag. J.*, vol. 32, no. 1, pp. 1–31, 2011.
- [13] D. J. Teece, "Business models, business strategy and innovation,"

- [14] *Long Range Plann.*, vol. 43, no. 2–3, pp. 172–194, 2010.
- [15] S. Khanagha, H. Volberda, and I. Oshri, “Business model renewal and ambidexterity: Structural alteration and strategy formation process during transition to a Cloud business model,” *R D Manag.*, vol. 44, no. 3, pp. 322–340, 2014.
- [16] N. J. Foss and T. Saebi, “Fifteen Years of Research on Business Model Innovation: How Far Have We Come, and Where Should We Go?,” *J. Manage.*, vol. 43, no. 1, pp. 200–227, 2017.
- [17] M. Morris, M. Schindehutte, and J. Allen, “The entrepreneur’s business model: Toward a unified perspective,” *J. Bus. Res.*, vol. 58, no. 6, pp. 726–735, 2005.
- [18] M. Sosna, R. N. Treviño-Rodríguez, and S. R. Velamuri, “Business model innovation through trial-and-error learning: The Naturhouse case,” *Long Range Plann.*, vol. 43, no. 2–3, pp. 383–407, 2010.
- [19] C. B. Bingham and K. M. Eisenhardt, “Rational heuristics: The ‘simple rules’ that strategists learn from process experience,” *Strateg. Manag. J.*, vol. 32, pp. 1437–1464, 2011.
- [20] D. J. Langley, J. van Doorn, I. C. L. Ng, S. Stieglitz, A. Lazovik, and A. Boonstra, “The Internet of Everything: Smart things and their impact on business models,” *J. Bus. Res.*, vol. 122, no. June 2018, pp. 853–863, 2021.
- [21] M. Rachinger, R. Rauter, C. Müller, W. Vorraber, and E. Schirgi, “Digitalization and its influence on business model innovation,” *J. Manuf. Technol. Manag.*, vol. 30, no. 8, pp. 1143–1160, 2019.
- [22] D. Kiel, C. Arnold, and K. I. Voigt, “The influence of the Industrial Internet of Things on business models of established manufacturing companies – A business level perspective,” *Technovation*, vol. 68, no. September 2016, pp. 4–19, 2017.
- [23] D. Sjödin, V. Parida, M. Jovanovic, and I. Visnjic, “Value creation and value capture alignment in business model innovation: A process view on outcome-based business models,” *J. Prod. Innov. Manag.*, vol. 37, no. 2, pp. 158–183, 2020.
- [24] L. Linde, J. Frishammar, and V. Parida, “Revenue Models for Digital Servitization: A Value Capture Framework for Designing, Developing, and Scaling Digital Services,” *IEEE Trans. Eng. Manag.*, pp. 1–16, 2021.
- [25] L. Linde, D. Sjödin, V. Parida, and H. Gebauer, “Evaluation of Digital Business Model Opportunities: A Framework for Avoiding Digitalization Traps,” *Res. Manag.*, vol. 64, no. 1, pp. 43–53, 2020.
- [26] H. Gebauer *et al.*, “How to convert digital offerings into revenue enhancement – Conceptualizing business model dynamics through explorative case studies,” *Ind. Mark. Manag.*, vol. 91, no. October, pp. 429–441, 2020.
- [27] M. Kohtamäki, V. Parida, P. C. Patel, and H. Gebauer, “The relationship between digitalization and servitization: The role of servitization in capturing the financial potential of digitalization,” *Technol. Forecast. Soc. Change*, vol. 151, no. July 2019, 2020.
- [28] I. Visnjic, M. Jovanovic, and S. Raisch, “Managing the Transition to a Dual Business Model: Tradeoff, Paradox, and Routinized Practices,” *Organ. Sci.*, no. June 2022, 2021.
- [29] A. Shomali and J. Pinkse, “The consequences of smart grids for the business model of electricity firms,” *J. Clean. Prod.*, vol. 112, pp. 3830–3841, 2016.
- [30] S. Erlinghagen and J. Markard, “Smart grids and the transformation of the electricity sector: ICT firms as potential catalysts for sectoral change,” *Energy Policy*, vol. 51, pp. 895–906, 2012.
- [31] J. Rodríguez-Molina, M. Martínez-Núñez, J. F. Martínez, and W. Pérez-Aguilar, “Business models in the smart grid: Challenges, opportunities and proposals for prosumer profitability,” *Energies*, vol. 7, no. 9, pp. 6142–6171, 2014.
- [32] P. Nillesen and M. Pollitt, *New business models for utilities to meet the challenge of the energy transition*. Elsevier Inc., 2016.
- [33] M. Richter, “German utilities and distributed PV: How to overcome barriers to business model innovation,” *Renew. Energy*, vol. 55, pp. 456–466, 2013.
- [34] M. Hamwi and I. Lizarralde, “A review of business models towards service-oriented electricity systems,” *Procedia CIRP*, vol. 64, pp. 109–114, 2017.
- [35] M. Palmié *et al.*, “Startups versus incumbents in ‘green’ industry transformations: A comparative study of business model archetypes in the electrical power sector,” *Ind. Mark. Manag.*, vol. 96, pp. 35–49, 2021.
- [36] C. Rochlin, “Distributed renewable resources and the utility business model,” *Electr. J.*, vol. 29, no. 1, pp. 7–12, 2016.
- [37] S. T. Bryant, K. Straker, and C. Wrigley, “The typologies of power: Energy utility business models in an increasingly renewable sector,” *J. Clean. Prod.*, vol. 195, pp. 1032–1046, 2018.
- [38] M. Larrea Basterra and M. Bilbao Ozamiz, “Modelo de negocios en recursos distribuidos de electricidad, Cuadernos Orkestra, 64/2020.Orkestra. Instituto Vasco de Competitividad, Fundación Deusto,” Bilbao, 2020.
- [39] S. Hall and K. Roelich, “Business model innovation in electricity supply markets: The role of complex value in the United Kingdom,” *Energy Policy*, vol. 92, pp. 286–298, 2016.
- [40] L. Korkeamäki and M. Kohtamäki, “To outcomes and beyond: Discursively managing legitimacy struggles in outcome business models,” *Ind. Mark. Manag.*, vol. 91, no. February, pp. 126–208, 2020.
- [41] T. Helms, “Asset transformation and the challenges to servitize a utility business model,” *Energy Policy*, vol. 91, pp. 98–112, 2016.
- [42] H. Lütjen, F. Tietze, and C. Schultz, “Service transitions of product-centric firms: An explorative study of service transition stages and barriers in Germany’s energy market,” *Int. J. Prod. Econ.*, vol. 192, no. April, pp. 106–119, 2017.
- [43] M. Singh, J. Jiao, M. Klobasa, and R. Frietsch, “Servitization of Energy Sector: Emerging Service Business Models and Startup’s Participation,” *Energies*, vol. 15, no. 7, p. 2705, 2022.
- [44] R. K. Yin, *Case study research: Design and Methods*, (2nd ed.). Newbury Park, CA: Sage, 1994.
- [45] D. A. Gioia, K. G. Corley, and A. L. Hamilton, “Seeking qualitative rigor in inductive research,” *Organ. Res. Methods*, vol. 16, no. 1, pp. 15–31, 2013.
- [46] M. G. Pratt, “Fitting oval pegs into round holes,” *Organ. Res. Methods*, vol. 11, no. 3, pp. 481–509, 2008.
- [47] M. G. Pratt, “For the lack of boilerplate: Tips on writing up (and reviewing) qualitative research,” *Acad. Manag. J.*, vol. 52, no. 5, pp. 856–862, 2009.
- [48] P. Töytäri, T. Turunen, M. Klein, V. Eloranta, S. Biehl, and R. Rajala, “Aligning the Mindset and Capabilities within a Business Network for Successful Adoption of Smart Services,” *J. Prod. Innov. Manag.*, vol. 35, no. 5, pp. 763–779, 2018.
- [49] E. Giesen, S. J. Berman, R. Bell, and A. Blitz, “Three ways to successfully innovate your business model,” *Strateg. Leadersh.*, vol. 35, no. 6, pp. 27–33, 2007.
- [50] M. Kohtamäki, V. Parida, P. Oghazi, H. Gebauer, and T. Baines, “Digital servitization business models in ecosystems: A theory of the firm,” *J. Bus. Res.*, vol. 104, no. June, pp. 380–392, 2019.
- [51] D. J. Teece and G. Linden, “Business models, value capture, and the digital enterprise,” *J. Organ. Des.*, vol. 6, no. 1, 2017.
- [52] T. Huikkola, R. Rabetino, M. Kohtamäki, and H. Gebauer, “Firm boundaries in servitization: Interplay and repositioning practices,” *Ind. Mark. Manag.*, vol. 90, no. October, pp. 90–105, 2020.
- [53] R. Rabetino, M. Kohtamäki, and H. Gebauer, “Strategy map of servitization,” *Int. J. Prod. Econ.*, vol. 192, 2017.
- [54] K. Frankenberger, H. Mayer, A. Reiter, and M. Schmidt, *The digital transformer’s dilemma: How to energize your core business while building disruptive products and services*. John Wiley & Sons, 2020.
- [55] G. P. Pisano, “Toward a prescriptive theory of dynamic capabilities: Connecting strategic choice, learning, and competition,” *Ind. Corp. Chang.*, vol. 26, no. 5, pp. 747–762, 2017.
- [56] D. J. Teece, “Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance,” *Strateg. Manag. J.*, vol. 28, pp. 1319–1350, 2007.
- [57] A. Osterwalder and Y. Pigneur, *Business Model Generation: A Handbook for visionaries, game changers, and challengers*. 2010.
- [58] R. Rabetino, M. Kohtamäki, C. Kowalkowski, T. S. Baines, and R. Sousa, “Guest editorial: Servitization 2.0: Evaluating and advancing servitization-related research through novel conceptual and methodological perspectives,” *Int. J. Oper. Prod. Manag.*, vol. 41, no. 5, pp. 437–464, 2021.
- [59] M. Kohtamäki, R. Rabetino, S. Einola, V. Parida, and P. Patel, “Unfolding the digital servitization path from products to product-service-software systems: Practicing change through intentional narratives,” *J. Bus. Res.*, vol. 137, no. September, pp. 379–392, 2021.